



Towards multi-functional agro-ecosystems: Multi-actor collaboration as a driver of demand for agricultural technologies

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OBJECTIVE



The study investigates how government, agricultural technology firms, development/international organisations and market actors **create demand for digital and smart agricultural technologies** in Ghana to enhance **productivity, economic inclusion** and **climate-resilient agricultural transformation** and **improved productivity**.



METHODOLOGY



With an interpretivist/qualitative design, the study analysed semi-structured interviews with **55 stakeholders or actors** across government institutions, agri-tech firms, development organisations, buyers and processors of agricultural products.



FINDINGS

Demand for technologies is not simply generated by technology availability, but it is **actively co-created** through coordinated interventions that **lower financial, informational and institutional barriers**.



GOVERNMENT

Creates demand through:

- Input subsidies
- Flexible credit & payment schemes
- Extension & advisory services
- Participatory co-creation
- Digital platforms
- Pilot demonstrations
- Strategic partnerships
- Market-based incentives



AGRI-TECH FIRMS

Create demand through:

- Need-based innovation
- Advertising & marketing
- Flexible service models
- Value creation



DEVELOPMENT ORGANISATIONS

Create demand by:

- Aligning with national strategies
- Supporting capacity building
- Facilitating value-chain linkages



MARKET ACTORS

Create demand by:

- Ensuring quality standards
- Buyer-led guidance
- Preferential access to organised markets



THEORETICAL CONTRIBUTIONS



The study contributes to theory by shifting technology diffusion research from supply-side explanations towards a **multi-actor demand-creation perspective**. It extends the Technology Acceptance Model and Innovation Diffusion Theory by demonstrating how ecosystem interventions influence **perceived usefulness, compatibility and behavioural intentions**.



CONCLUSIONS / RECOMMENDATIONS



The study concludes that **multi-actor collaboration** among policymakers, entrepreneurs, development organisations and market actors is essential for **sustainable agricultural technology adoption in Ghana**. It recommends strengthening **ecosystem coordination, inclusive support mechanisms and climate-smart innovation policies** to enhance technology uptake and build resilient agricultural innovation systems.

